

PURCHASE DESCRIPTION

MICROWAVE SWEEP GENERATOR (10 MHz to 20 GHz)

GE1RU-B

- 1.0 GENERAL These salient characteristics describe a microwave sweep generator covering a frequency range of 10 MHz to 20 GHz employing no more than one plug-in and one mainframe.
- 2.0 CLASSIFICATION The sweep generator described herein shall meet the requirements of MIL-T-28800D, Type III, Class 5, Style E, Color R for Navy shipboard, submarine and shore applications with the following modifications and exceptions:
  - a. Non-operating temperature: -40°C to +70°C
  - b. Temperature/humidity: Non-condensating
  - c. Altitude: Not required
  - d. EMI requirements: Not required
  - e. 400 Hz Power Source: Not required
  - f. The equipment warm-up period is increased to 1 hour.
- 3.0 OPERATIONAL CHARACTERISTICS
  - 3.1 Frequency Characteristics
    - 3.1.1 Frequency Range: 10 MHz to 20 GHz; a maximum of one plug-in or RF output is allowed.
    - 3.1.2 Frequency Resolution: The displayed frequency resolution shall be at least 1 MHz.
    - 3.1.3 Frequency Accuracy: Measured accuracy within  $\pm 10$  MHz at 25°C  $\pm 5^\circ\text{C}$
    - 3.1.4 Frequency Stability (less than the limits specified below)
      - 3.1.4.1 Temperature:  $\pm 1$  MHz/ $^\circ\text{C}$  (over 0-50°C operating range)
      - 3.1.4.2 Line Voltage:  $\pm 200$  kHz ( $\pm 10\%$  line voltage variation about 115 Vac)
      - 3.1.4.3 Warm-up:  $\pm 1$  MHz/10 minutes after 1 hour warm-up
    - 3.1.5 Residual FM in CW Mode: Less than 10 kHz peak (measured in 50 Hz to 15 kHz bandwidth)
    - 3.1.6 Spectral Purity (at least the limits specified below)
      - 3.1.6.1 Harmonics/Sub-harmonics: -20 dBc
      - 3.1.6.2 Spurious/Non-harmonics: -25 dBc
  - 3.2 Output Characteristics
    - 3.2.1 Output Connector: Type N
      - 3.2.1.1 VSWR: Less than 2:1
    - 3.2.2 Output Level: +7 dBm leveled (minimum value of maximum leveled output)
    - 3.2.3 Output Level Adjustment Range: At least 60 dB
    - 3.2.4 Output Display: Digital readout of output power level specified in 3.2.3; resolution 0.1 dB
    - 3.2.5 Level Accuracy:  $\pm 1.5$  dB (displayed level vs measured output level)
    - 3.2.6 Output Level Variation:  $\pm 1.0$  dB

3.2.7 Attenuator Error: Maximum attenuator error shall be less than  $\pm 3.3$  dB.

3.3 Modulation Characteristics

3.3.1 Amplitude Modulation (AM)

3.3.1.1 Internal AM (square wave)

3.3.1.1.1 Rate: 1 kHz and 27.8 kHz

3.3.1.1.2 On/Off Ratio: Greater than 30 dB

3.3.1.2 External AM (square wave or pulse)

3.3.1.2.1 Rate: 10 Hz to 50 kHz

3.3.1.2.2 Input Levels: TTL compatible

3.3.1.2.3 Sensitivity: 1 dB/V, maximum input 15V

3.3.2 Frequency Modulation (FM)

3.3.2.1 External FM

3.3.2.1.1 Deviation: At least 0 to  $\pm 7$  MHz

3.3.2.1.2 Rate: 10 Hz to 100 kHz

3.3.2.1.3 Sensitivity: Greater than 5 MHz/V

3.4 Sweep Characteristics

3.4.1 Range: 10 MHz to 20 GHz

3.4.2 Sweep Function: Start/Stop, CW,  $\Delta F$ , Marker

3.4.3 Trigger Modes: Internal (automatic), Line, External, Single, Manual

3.4.4 Frequency Markers: At least 5; both amplitude and frequency

3.4.5 Sweep Output: 0 to 10 V  $\pm 0.5$  V, direct coupled, coincident with the swept RF output

3.4.6 Sweep Time: Adjustable from at least 10 msec to 99 sec over any portion of the band

3.5 Displays (digital)

3.5.1 Frequency: Start/Stop, CW, CF/ $\Delta F$  (4 digits)

3.5.2 Marker/Time: Marker frequency or sweep time (3 digits)

3.5.3 Output Level: Output signal level in dBm (3 digits)

4.0 GENERAL REQUIREMENTS

4.1 Power: 115 or 230 Vac  $\pm 10\%$ , single phase, 50 or 60 Hz, 400 W maximum

4.2 Dimensions: Less than 2000 cubic in (32,744 cubic cm); maximum height allowable 6 inches including feet

4.3 Weight: Less than 60 lbs (27.3 kg)

4.4 Local Operation: All front panel control settings shall be storable in non-volatile memory for future recall.

4.5 Remote Programming: IEEE-488-1975 interface bus; all front panel controls except ac line power switch are programmable.

4.6 Diagnostics: Functional self-test and trouble shooting shall be accomplished using front panel controlled diagnostic functions.

4.7 Rack Mountable

4.8 Calibration Interval: After calibration the equipment shall meet each performance requirement within the specified tolerances for a period of at least 12 months.